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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,791	07/22/2003	Richard M. Crooks	017575.0858 (TAMUS 1915)	9004
5073	7590	12/01/2006	EXAMINER TURK, NEIL N	
BAKER BOTTS L.L.P. 2001 ROSS AVENUE SUITE 600 DALLAS, TX 75201-2980			ART UNIT 1743	PAPER NUMBER

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/625,791	Applicant(s) CROOKS ET AL.	
	Examiner Neil Turk	Art Unit 1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 20-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 20-29 is/are rejected.
- 7) ☒ Claim(s) 10 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/22/03, 6/10/04, 12/1/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, claims 1-10 and 20-29, in the reply filed on September 15th, 2006 is acknowledged. Claims 11-19 and 30-44 are withdrawn from consideration as being drawn to a non-elected invention.

Claim Objections

Claims 10 and 29 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 9 and 28, respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). It is unclear how the electrodes are different in the claims and if there is any relationship between the electrodes that would allow for them to be distinguished, aside from a switch in naming.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 6, 20, 21, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by De Rooij (6,509,195).

De Rooij discloses electrochemiluminescent systems for detecting and analyzing a biochemical or biological substance (abstract; lines 1-35, col. 1). De Rooij discloses the detector includes cells 11 and 12 for generating and detecting the electrogenerated chemiluminescence, and each cell includes a working electrode 16, 17 (cathode and anode, respectively), with a power supply 13 connected to the electrode, a photodiode 14 for detecting the light generated by electrochemiluminescence and a device for measuring the signal delivered by the photodiode (abstract; lines 54-67, col. 1; lines 37-67, col. 2, figs. 1-4). De Rooij also discloses that power supply 13 of cell 11 includes electric power source 21 and conductive paths 22, where the conductive paths connect electrodes 16 and 17 to the source (lines 47-56, col. 3). De Rooij also discloses that measuring means 15 include two conductive paths 23 and connect to the two photodiodes to two amplifiers 24, and these amplifiers receive the photocurrent generated by the photodiodes and supply an amplified signal to a measuring apparatus

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25. De Rooij also discloses that the measuring apparatus determines a signal representative of the difference between the signal supplied by the photodetector of active cell 11 and that supplied by the photodetector of reference cell 12 (lines 57-65, col. 3). De Rooij also discloses that the working electrodes are used as cathode and anode, and the protein to be analyzed, marked by $\text{Ru}(\text{bpy})_3^{2+}$, in aqueous solution, is introduced into a receptacle, and the two cells 11 and 12 are then placed in the receptacle. De Rooij further discloses that in the active cell 11 the $\text{Ru}(\text{bpy})_3^{2+}$ is reduced at the cathode 17 to $\text{Ru}(\text{bpy})_3^+$ and oxidizes into $\text{Ru}(\text{bpy})_3^{3+}$ at anode 16. De Rooij further discloses that following an annihilation reaction between $\text{Ru}(\text{bpy})_3^+$ and the $\text{Ru}(\text{bpy})_3^{3+}$, photons are released and detected by photodiode 14 of active cell 11 (lines 12-23, col. 4, fig. 1). De Rooij further disclose that by determining in the measuring apparatus 25, a difference between the signals from each of the two cells, a value corresponding to the current generated solely by the electrochemiluminescence is obtained (lines 38-44, col. 4). De Rooij discloses a second method in which the interdigitated electrodes are used a single working electrode (bipolar electrode). De Rooij discloses that the aqueous solution contained the ruthenium marked protein differs from that of the first method in that a co-reagent, such as amine is used. De Rooij disclose that an oxidation reaction of the amine and ruthenium is induced by powering the anode, and the chemical reaction between the oxidized amine and the $\text{Ru}(\text{bpy})_3^{3+}$ generates the excited state to generate light for detection by the photodiode, and subsequent indication of the quantity of the marker (thus, the substance to be analyzed) (lines 51-59, col. 4, fig. 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7, 9, 10, 26, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Rooij in view of Weetall (4,963,245).

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De Rooij has been discussed above.

De Rooij does not disclose using a plurality of each of the electrodes and light emitting sources in the different cells.

De Rooij discloses an individual set of electrodes may detect a quantity of a marker through redox reaction and thus the substance to be analyzed through producing and detecting electrochemiluminescent light.

Weetall discloses a multiple electrochemical electrode sensor array (each well 14 having a working electrode 22, counter electrode 24 and reference electrode 26) for detecting analytes by measuring redox reactions (abstract; lines 45-67, col. 1; lines 12-67, col. 2; figs. 1-5).

Examiner interprets the modification of Weetall to multiple sets of electrodes brings a plural amount light emitting sources in the form of the electrochemiluminescent light generated in each.

It would have been obvious to modify the De Rooij device to include an array of electrodes such as taught by Weetall so as to enable detection of multiple analytes through measuring redox reactions and generating and detecting the electrochemiluminescence.

Claims 3, 5, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Rooij (6,509,195) in view of Amirkhanian (6,529,275).

De Rooij has been discussed above.

De Rooij does not disclose that the light-emitting source is light-emitting diode.

Amirkhanian discloses optical detection in a bio-separation device. Amirkhanian discloses that incident radiation from a laser or LED source is directed at analytes in the detection zone so as to effect radiation emission (lines 5-13, col. 5). Amirkhanian discloses that during the emissive detection, the amount or intensity of the radiation that is emitted from the analytes (radiated by the LED) is being detected, representative of the characteristic of the analytes and the interaction with the particular radiation source in emitting radiation (lines 15-36, col. 5).

It would have been obvious to modify the De Rooij device to include an LED as the light-emitting source such as taught by Amirkhanian so as to provide a radiation source to direct to the analytes to effect radiation emission from the analytes and thereby the detect the emission to quantify/characterize the analyte.

Claims 4 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Rooij in view of Amirkhanian as applied to claims 3-5 and 22-24 and in further view of Miyazaki (5,370,842).

De Rooij does not disclose that the light-emitting source is a semi-conductor light-emitting diode.

Miyazaki discloses a sample measuring device and system that utilizes an LED or semiconductor laser as the light sources 14, 16 (lines 7-67, col. 1; lines 1-20, col. 2; lines 13-33, col. 5, fig. 1).

It would have been obvious to modify the De Rooij/Amirkhanian device to include a semiconductor laser such as taught by Miyazaki such that the semiconductor laser is known as an alternative to an LED.

Claims 8 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Rooij in view of Weetall as applied to claims 7, 9, 10, 20, 21, and 26 and in view of Amirkhanian as applied to claims 3-5 and 22-24.

De Rooij does not disclose the plurality of light-emitting sources are light-emitting diodes.

It would have been obvious to modify the De Rooij/Weetall device to include LEDs as the light-emitting sources such as taught by Amirkhanian so as to provide radiation sources to direct to the analytes to effect radiation emission from the analytes and thereby the detect the emission to quantify/characterize the analyte.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure such that it is relevant to applicant's field of endeavor.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Neil Turk whose telephone number is 571-272-8914.

The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NT


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